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# ARCHITECTURAL GRANITE

*"The Noblest of Building Stone"*

No. 1 of the Granite Series

**National Building Granite Quarries Assn., Inc.**  
BOSTON, MASS.

Reprinted from SWEET'S CATALOGUE



Architects may easily secure for the owner a larger number of responsible competitive granite bids by referring their requests for bids through the Association. Architects and general contractors are invited to advise the Association concerning prospective work, calling for granite, giving the date where possible when bids will close. This information will be transmitted to the members and will result in bids which might not otherwise be secured.

### Architectural Uses of Granite.

Granite has many and varied qualifications adapting it for architectural uses. Its natural qualifications are unsurpassed by any other material for exterior building purposes. The durability, hardness, and toughness of granite is so well established that it scarcely needs any comment. Granite occurs, and is produced, in a wide range of colors and textures. The color plates give some idea of this range, but space is too limited to show the great variety of texture produced by the many grades of finish, and combinations of different finishes.

Granite is often considered as adapted only to plain or massive work. That granite may be carved with as much fineness and delicacy of detail as marble, for instance, has not been generally known, but is nevertheless a well established fact. There are many fine examples where granite carving and detail can not be surpassed in any material—with the added feature that this detail will retain its sharpness and delicacy indefinitely, unaffected by action of weather or time.

Granite has a well recognized value as a commercial building material, due to its strength and durability. It is also preeminently adapted for perpetuating architectural masterpieces, where ultimate results outweigh mere cost considerations. Modern tools and appliances have made it possible to execute fine architectural details and carving in granite within reasonable time and cost, having in mind the worth-while result.

**DESIGN OF DETAIL TO REDUCE COST**—When cost is an important factor the application of certain fundamental principles in design, which take into account the methods of cutting granite and the elimination of minor details, which tend to increase expense out of proportion to their architectural merit, will enable very substantial savings to be made.

The best results will be secured at the minimum of cost when details are worked out for granite rather than just for stone as is generally the case. It has frequently happened that application of these principles has reduced the total cost very materially. The Association will appreciate every opportunity to make suggestions in this connection.

### Description of Granite.

Granite is a holocrystalline, granular rock of igneous origin. The essential constituents are quartz and a potash feldspar. The principal accessory mineral is usually either mica or hornblende. Other minerals occur in small quantities, but are generally secondary to those mentioned.

The accessory mineral, mica, occurs in two forms—black mica or biotite, and white mica or muscovite. The hornblende in building granite is usually black or a very dark green.

Granites are usually classified by the predominating accessory mineral. The most common varieties of building granites are known as biotite, muscovite, biotite-muscovite, muscovite-biotite, hornblende, biotite-hornblende, and quartz-monzonite.

As a general rule the color of granite is determined

by that of its feldspars, and the hardness by the quartz and feldspars, varying according to the proportion and hardness of the feldspars.

**COLORS AND TEXTURES**—The granites produced by Association members include many shades of gray, lavender, pink, red, green, brown, buff and white. Natural texture varies according to the distribution and size of crystals of the constituent minerals. Granite is graded as to grain by the size of its feldspar crystals, from very fine to very coarse. The size of crystals or coarseness of grain has practically no bearing on the structural qualities, but gives to granite the variety of texture which adds greatly to its architectural possibilities.

### Physical and Chemical Tests.

The standard building granites so far exceed all ordinary architectural requirements as to chemical and physical properties, that specific data on tests has little or no bearing upon the relative architectural merits of the different granites.

In confirmation of this, the following statement, prepared by Mr. G. F. Loughlin of the U. S. Geological Survey is quoted in full:

"Physical tests have supplemented actual experience in the use of granite by showing that it exceeds the requirements for the tallest and most exposed buildings to a great degree. With this fact demonstrated, the actual results of strength and porosity tests are of little significance; far less than an accurate knowledge of the component minerals and their state of preservation as revealed by the microscope.

"Recorded crushing strengths of granite may serve as relative measures of soundness provided the tests were all made on machines that are calibrated alike and provided enough samples of each granite are tested to show its range in strength, also provided all samples are prepared with equal care; but as even the lowest recorded results obtained under unfavorable circumstances are far above the maximum required for the tallest buildings, the fact that the crushing strength of one granite is somewhat more than that of another should be of no concern to the architect or builder. Only when monuments of solid masonry and of unusual height are to be erected or when paving stone for extremely heavy traffic is to be laid, do crushing tests of granite need any consideration.

"Transverse breaking strengths of granites are also quite adequate to support any load that they are expected to support in buildings. There is much more danger of cracking from uneven settling of foundations than from overloading, and examples can be shown where granites with the highest recorded transverse strength have cracked when the load upon them was relatively low.

"Issues have been raised at times regarding the porosity of granite. Unweathered granites such as are supplied to the high class building trade are for all practical purposes absolutely impervious except close to the surfaces of blocks where minute cracks have been developed during splitting or tooling. 'Porosity' varies with the number and depth of these cracks. Differences in 'porosity' may indicate which granites are most likely to 'blister' from frost action if tooled too severely. If 'blistering' takes place it extends only to the depth of the minute surface cracks and thereafter weathering effects are imperceptible. That granite weathers in nature is undisputed, but conditions of weathering in the walls of a building are much less severe and not strictly comparable, and the time necessary for unweathered and properly fabricated granite to show appreciable effects of weathering in buildings is too long to cause concern except for monumental structures intended to last for thousands of years.

"Chemical analyses of granite, as usually recorded, are of little or no value from the builder's standpoint. For proper interpretation they require microscopic study. Such study supplemented by examination of the granite in the quarry and in the building, will disclose the essential facts regarding weathering qualities and other important questions. Such study may result in a call for special chemical tests, for example, to determine permanency of color, and then specific directions should be given to render the test thorough. For most granites, however, competent examination in the quarry and in structures supplemented by microscopic study will give all the information needed without resort to any physical or chemical tests."



CLASSIFICATION OF BUILDING GRANITES  
Quarried and cut by Association Members  
White, Gray, Lavender, Pink, Red, Green, Buff, Brown

Color plate number	Name of granite	Producer and manufacturer	Location of quarry	Grain	Color	Technical classification
2	Bethel White.....	Woodbury Granite Co., Hardwick, Vt.	Bethel, Vt.....	Coarse inclined to medium.....	White-faintly mottled with gray.....	Quartz-monzonite.
3	Mount Airy.....	North Carolina Granite Corp., Mt. Airy, N. C.	Mount Airy, N. C.....	Medium.....	Very light gray.....	Biotite.
3	Mount Airy.....	Lennerman & Hoffman Granite Co., Mt. Airy, N. C.	Mount Airy, N. C.....	Medium.....	Very light gray.....	Biotite.
3	Mount Airy.....	Mt. Airy Granite Cutting Co., Mt. Airy, N. C.	Mount Airy, N. C.....	Medium.....	Very light gray.....	Biotite.
3	Mount Airy.....	J. D. Sargent Granite Co., Mt. Airy, N. C.	Mount Airy, N. C.....	Medium.....	Very light gray.....	Biotite.
4	North Jay.....	Maine & New Hampshire Granite Corp., North Jay, Me.	North Jay, Me.....	Fine.....	Very light gray.....	Biotite-muscovite.
6	Chelmsford Gray.....	H. E. Fletcher Co., West Chelmsford, Mass.	West Chelmsford, Mass.....	Fine and medium.....	Light gray.....	Muscovite-biotite.
7	Victoria White.....	Milford Pink-Victoria White Granite Co., Milford, Mass.	Fitzwilliam, N. H.....	Fine.....	Light gray.....	Biotite-muscovite.
5	Milford, N. H.....	Lovejoy Granite Co., Milford, N. H.	Milford, N. H.....	Fine inclined to medium.....	Light gray.....	Quartz-monzonite.
..	Stone Mountain.....	Stone Mountain Granite Corp., Stone Mountain, Ga.	Stone Mountain, Ga.....	Moderately fine.....	Light gray.....	Biotite-bearing muscovite.
8	Concord.....	John Swenson Granite Co., Concord, N. H.	Concord, N. H.....	Fine to medium.....	Light to medium gray.....	Muscovite-biotite
8	Concord.....	New England Granite Works, Westerly, R. I.	Concord, N. H.....	Fine to medium.....	Light to medium gray.....	Muscovite-biotite
..	Connecticut White.....	Booth Bros. & Hurricane Isle Granite Co., 208 Broadway, New York, N.Y.	Waterford, Conn.....	Fine.....	Medium buff gray, hammers light.....	Quartz-monzonite
..	Westerly Blue-White.....	New England Granite Works, Westerly, R. I.	Westerly, R. I.....	Fine.....	Bluish gray.....	Quartz-monzonite
10	Woodbury Gray.....	Woodbury Granite Co., Hardwick, Vt.	Woodbury, Vt.....	Medium.....	Medium gray.....	Biotite
9	Rockport Gray.....	Rockport Granite Co., Rockport, Mass.	Rockport, Mass.....	Medium to coarse.....	Medium gray, slight bluish-green tinge.....	Hornblende
12	Stonington Pink-Gray.....	Rodgers Granite Corp., 271 W. 125th St., New York, N. Y.	Deer Isle, Stonington, Me.	Coarse.....	Pinkish-lavender tinted, medium gray.....	Biotite
11	Goss Pink.....	John L. Goss Corp., Stonington, Me.	Crotch Island, Stonington, Me.....	Coarse.....	Pinkish-lavender tinted, medium gray.....	Biotite
13	Conway Pink.....	Maine & New Hampshire Granite Corp., North Jay, Me.....	Redstone, N. H.....	Coarse.....	Light pink mottled with large gray and small black spots.....	Biotite
14	Milford Pink.....	Milford Pink-Victoria White Granite Co., Milford, Mass.	Milford, Mass.....	Medium to coarse.....	Light to medium pink, black mica specklings.....	Biotite
..	Jonesboro.....	Booth Bros. & Hurricane Isle Granite Co., 208 Broadway, New York, N.Y.	Jonesboro, Me.....	Coarse inclined to medium.....	Pinkish-gray.....	Biotite
1	Stony Creek.....	Milford Pink-Victoria White Granite Co., Milford, Mass.	Stony Creek, Conn.....	Very variable medium to coarse gneissoid texture.....	Medium reddish-gray.....	Biotite
16	Red Westerly.....	New England Granite Works, Westerly, R. I.	Westerly, R. I.....	Medium inclined to coarse.....	Reddish-gray speckled with black.....	Biotite
15	Moose-a-bee Red.....	Rockport Granite Co., Rockport, Mass.	Jonesport, Me.....	Coarse.....	Dark reddish-gray with white and pinkish feldspar.....	Biotite
18	Rockport Sea-Green.....	Rockport Granite Co., Rockport, Mass.	Rockport, Mass.....	Medium to coarse.....	Dark olive-green-gray with black specklings.....	Hornblende
19	Conway-Green.....	Maine & N. H. Granite Co., North Jay, Me.	Redstone, N. H.....	Coarse.....	Dark yellowish-greenish-gray with black specklings.....	Biotite-hornblende
17	Somes Sound.....	Booth Bros. & Hurricane Isle Granite Co., 208 Broadway, New York, N.Y.	Mt. Desert, Me.....	Coarse inclined to medium.....	Light grayish-buff.....	Biotite
..	Rockport Seam-Face.....	Rockport Granite Co., Rockport, Mass.	Rockport, Mass.....	Medium.....	Dark yellow-brown, bright rust-brown, light yellow-brown.....	Hornblende

**Plate No. 1, Stony Creek Granite.**

Quarry at Stony Creek, Conn.

Quarried and cut by:  
MILFORD PINK-VICTORIA  
WHITE GRANITE CO.  
(Main Office) Milford, Mass.

*Note*—The marked feature of this granite is its very irregular texture which it is impossible to do justice to in such a small sample. This is technically "biotite granite gneiss" and its unusual texture is due to pegmatitic injection, flow structure and gneissic foliation.



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## Color Plates.

Plates Nos. 1 to 19 inclusive are color reproductions of some of the principal building granites produced by Association members. These reproductions are full size as to grain or texture and approximate as to color.

This set of color plates does not show all the granites, nor do they show the many different finishes which are applicable to each granite. In general, the colored granites have been reproduced from a polished finish and the light colored or gray granites from hammered finishes, including medium pointed, four-cut, six-cut, and eight-cut.

It should be borne in mind that, as a rule, polishing produces a darker tone and brings out the color of each component crystal, while a hammered finish shows up much lighter and softens the colors of the contrasting minerals.

This collection of color plates will serve a two-fold purpose:

First, they will give at a glance some idea of the great range in colors and texture in American granites. Second, they will serve as preliminary samples and assist the architect in making preliminary selections for specific purposes, thereby avoiding the necessity of securing actual samples until the final selection is to be made.

## Quarrying.

In selecting granite for building purposes, the quarry is the first essential and most vital consideration. The principal requirement of a building granite is ability to produce, in quantity, granite of the particular color, texture and sizes required and the quarry must be so equipped that the output may be handled and shipped promptly and at a rate to meet cutting requirements.

The Association quarries without exception meet the above requirements. They are all quarries of established reputation and have been developed to meet the requirements of quantity production. The only practical limit to sizes of individual blocks for specific purposes is that of transportation.

Most of the quarries are operated in conjunction with their own cutting and finishing plants, which handle the bulk of the quarry output, although several of the quarries ship part of their output in the rough to outside cutting plants and one Association quarry ships practically all of its output in the rough.

## Cutting and Finishing.

Modern time requirements demand that building granite plants be well equipped with machinery and appliances for handling and manufacturing. Association plants include the largest and best equipped plants of their kind in the country.

Granite is delivered from the quarry in rough blocks—some already split to approximate dimension sizes and others in random sizes to be drilled and split to dimension or sawed into slabs for ashlar or polished work. Pneumatic drills are universally used for drilling up rough stock or slabs, and pneumatic hand tools for cutting the edges, mouldings, and for carving.

Pneumatic surfacing machines rough down large surfaces, and point or cut them to the form and finish required. Surfacing machines also bush sawed slabs to

the various cut finishes, core and rough out heavy checks or mouldings, recess for panels, rough and finish the surface of columns, rough out the flutes and similar work.

Polishing machines are used for producing rubbed, honed, or polished work, from surfaces prepared either by surfacing machines or saws. Steel shot, carborundum and emery are used as abrasives for grinding down the surfaces, and heavy felt faced wheels gloss the surface thus ground, using oxide of tin and water. Small surfaces, mouldings, etc., are rubbed and polished by hand.

Round work, such as balusters and columns, are usually turned to required finish in specially built lathes using disc cutters. Lathes are also used for polishing round work. Several Association plants are equipped to do turned work for plants not so equipped.

Carborundum machines are coming into more general use in granite plants for special work such as cutting checks, rabbets, arrises, and for freeing flutes and mouldings.

Saws are used for cutting up blocks into slabs of various thicknesses, leaving smoothly finished surfaces, ready for bushing or polishing.

Handwork is required in finishing practically every piece of architectural granite, and a good journeyman granite cutter is one of the most skillful craftsmen in industry today. No tool or machine can displace this craftsman—his skill of hand and eye is as indispensable today as when the Egyptians cut their granite temples.

The handling, machining, sawing, and polishing of granite consumes power in relatively large quantities, and the power plant is one of the most important accessories to the direct cutting and finishing operations. Blacksmith shops, carpenter shops, and repair shops are also necessary accessories.

## Standards of Quality.

It will be noted under "Physical and Chemical Tests" that these standard building granites come well within all possible requirements of architectural use, so that standards of material are unnecessary. The cutting properties of the granites from different quarries vary quite materially and it would be very difficult to define standards of workmanship.

Quality of workmanship has been graded by usage into three classifications, which, while somewhat elastic and difficult to define exactly, are pretty well established and recognized by the manufacturers.

**MONUMENTAL BUILDING GRADE**—For permanent buildings designed to perpetuate public pride or civic spirit, where utility and economy are subordinate to architectural merit, such as state house, courthouse, library or public memorial.

**GOOD COMMERCIAL GRADE**—For high class buildings designed both for utility and to express something of the character, dignity and stability of the occupancy, such as banks or insurance buildings, high class office buildings, churches, schools, etc.

**ORDINARY COMMERCIAL GRADE**—For buildings where architectural appearance is subordinate to utility and governed by economic considerations. Workmanship will meet requirements of structural safety, but not carried beyond the point of a good appearance to the casual observer.



**Plate No. 2, Bethel White Granite.**

Quarry at Bethel, Vermont.

Quarried and cut by:  
WOODBURY GRANITE CO.  
(Main Office) Hardwick, Vt.

NOTE.—Actual granite much whiter than reproduction.



**Plate No. 3, Mount Airy Granite.**

Quarry at Mount Airy, N. C.

Quarried by:  
NORTH CAROLINA GRANITE  
CORPORATION  
(Main Office) Mount Airy,  
N. C.

Cut by:  
J. D. SARGENT GRANITE CO.  
Mount Airy, N. C.  
LEMMERMAN & HOFFMAN  
GRANITE CO.  
Mount Airy, N. C.  
MOUNT AIRY GRANITE  
CUTTING CO.  
Mount Airy, N. C.

NOTE.—Actual granite whiter than reproduction.



**Plate No. 4, North Jay Granite.**

Quarry at North Jay, Me.

Quarried and cut by:  
MAIN & NEW HAMPSHIRE  
GRANITE CORPORATION  
(Main Office) North Jay, Me.





## Surface Finishes.

The surface finishes most frequently used for granite on building work, arranged in the order of their relative cost are: rock-faced, pointed, pean-hammered, four-cut, six-cut, eight-cut, rubbed, and polished. These terms are frequently misunderstood and sometimes misapplied. The following brief description of finishes most generally used are therefore given:

**ROCK FACE**—Generally the least expensive finish, but with decorative as well as utilitarian value. The relative cost varies according to the grade of work required. The grades vary from ordinary split or quarry face ashlar with split or roughly squared beds and joints, to carefully quarried faces having practically uniform projection, beds, joints and arrises as carefully and accurately cut as for hammered work, and sometimes with rusticated or tooled margins.

**POINTED WORK**—Coarse, medium, and fine pointed are the three general distinctions for grade of pointing, with many special grades for certain texture effects.

Hand pointing and machine pointing differ slightly in general appearance, machine pointing being generally more uniform. Special pointing will usually necessitate handwork. In general the point depressions in fine pointing will be approximately  $\frac{3}{8}$  in. apart, medium pointing  $\frac{5}{8}$  to  $\frac{3}{4}$  in., and coarse pointing 1 to  $1\frac{1}{4}$  in.

Where special pointing is required, a sample should first be prepared under the architect's personal supervision. Beds, joints and arrises will conform to the method of use and grade of pointing.

**PEAN-HAMMERED**—Finish is adapted to rougher work such as steps, curbings, house or mill sills and thresholds, or on portions of high class work which require level finished surfaces, but which are not exposed to the eye. In general this finish is somewhat coarser and less regular than four-cut and the point marks are not entirely eradicated by the axing.

**FOUR-, SIX-, AND EIGHT-CUT**—These surfaces are finished by bushing with the patent bush hammer. This is a hand hammer with patent head having two opposite jawlike openings approximately  $\frac{7}{8}$  in. wide, in which are firmly bolted sets of 4, 6 or 8 cutting blades as the case may be.

Four-cut work is frequently and erroneously described as 4 cuts to the inch. Actually the four-cut hammer leaves nearer 5 cut marks to the inch, as 4 cutting blades are clamped into the  $\frac{7}{8}$ -in. opening of the jaw; 6 and 8 cuts to the inch are likewise improperly so termed.

To produce four-cut work the rough split face is taken out-of-wind and reduced to an approximately level surface by pointing. This pointed surface is then further leveled and smoothed by cross-bushing with either a pean-hammer or four-cut, removing all trace of the pointing. This surface is then bushed with a sharp four-cut hammer, the bushing being kept parallel and in the required direction, until the entire surface is uniformly bushed to a true and level surface. The finished bush marks are not necessarily continuous or mechanically precise, but the resultant surface has the appearance of being uniformly corrugated to the fineness determined by the hammer used.

Six- and eight-cut finishes are simply continuations of the four-cut process, each coarser hammer being used consecutively, until the required finish is reached.

Pneumatic surfacing machines are also used for bushing, especially on larger surfaces, following practi-

cally the same routine as above described for hand bushing. Sawed surfaces are bushed under the surfacing machines, in which case the pointing process is unnecessary.

**TEN-CUT AND TWELVE-CUT**—These surfaces are also produced, but the finer finishes are less frequently used on regular building work, being more applicable to monumental or special work. Texture and character are emphasized by the coarser cuts.

**RUBBED AND HONED WORK**—Produced by grinding a pointed or sawed surface under the polishing mill. The grade of rubbing is determined by the extent to which this grinding process is carried, from coarse rubbed, with small surface scratches, adapted to work requiring fine finish but not close to the eye, to honed finish which is the last stage just before glossing, with dead smooth surface, practically free from scratches. Small surfaces and mouldings are generally rubbed or honed by hand and the relative expense of this finish is materially affected by the amount of handwork necessary.

**POLISHED WORK**—Produced by glossing, under a heavy felt coated wheel, a surface previously rubbed and honed. A durable and mirrorlike polish can only be obtained by carrying the grinding and glossing processes to their extreme stages, leaving the surface free from scratches, dull spots, or indications of stun marks from tooling.

Under modern methods, practically every standard granite may be polished to a satisfactory gloss suitable and durable for most ordinary requirements. Generally the harder granites and those containing the least mica content take a higher and more durable polish than the softer granites and those with abundant mica particles.

The preparation of the surface for polishing is almost as important as the polishing processes. Sawed surfaces are well adapted for polishing, and when surfaces are prepared by hand or machine pointing, sufficient excess material should be left for grinding to avoid stun marks in the finished surface.

## Selecting the Finish.

The following general suggestions will indicate methods of selection, which depend on the type and design of building, color and texture of the granite, location and atmospheric conditions.

Large scale work: rock-face, pointed and the coarser cuts. Small scale work: the finer cuts.

Rock-face, pointed, pean-hammered, and four-cut for economy, and rock-face and pointed for decorative effect in conjunction with hammered work and other materials.

Six-cut for average work, combining economy with good architectural effect.

Polished for base courses, portions subject to traffic stain, lower stories where exposed to smoky atmosphere, and for decorative effect.

Rubbed or honed where fine finish is required and for softened tone and texture effects.

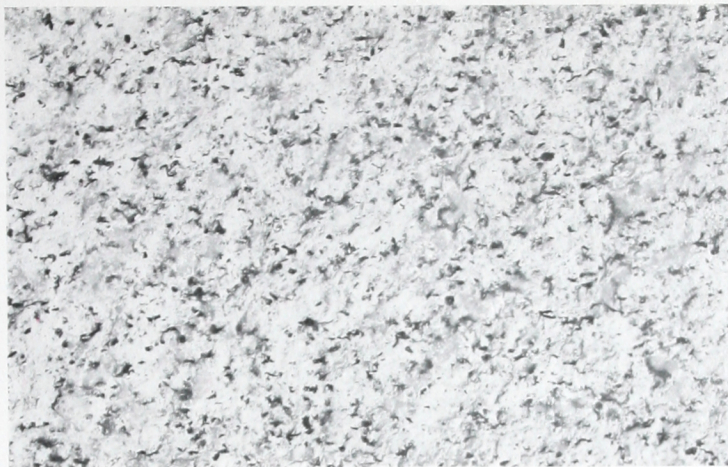
Polished finish is practically impervious to stain or weather. Fine finishes will keep clean longer than coarser finishes, particularly where subject to atmospheric dirt and dust.

The possibilities of combining different grades of finish are almost unlimited, and combinations of different granites are used extensively with splendid architectural results.



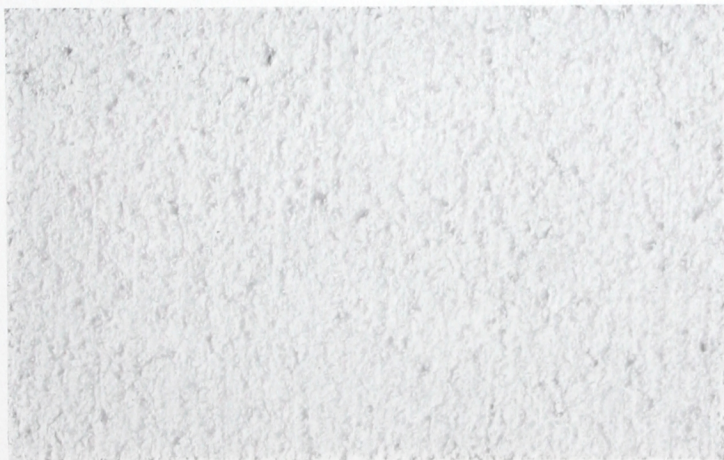
**Plate No. 5, Milford (N. H.)  
Granite.**

Quarry at Milford, N. H.  
Quarried and cut by:  
LOVEJOY GRANITE CO.  
Milford, N. H.  
Cut by:  
H. E. FLETCHER CO.  
West Chelmsford, Mass.



**Plate No. 6, Chelmsford Gray  
Granite.**

Quarry at West Chelms-  
ford, Mass.  
Quarried and cut by:  
H. E. FLETCHER CO.  
West Chelmsford, Mass.

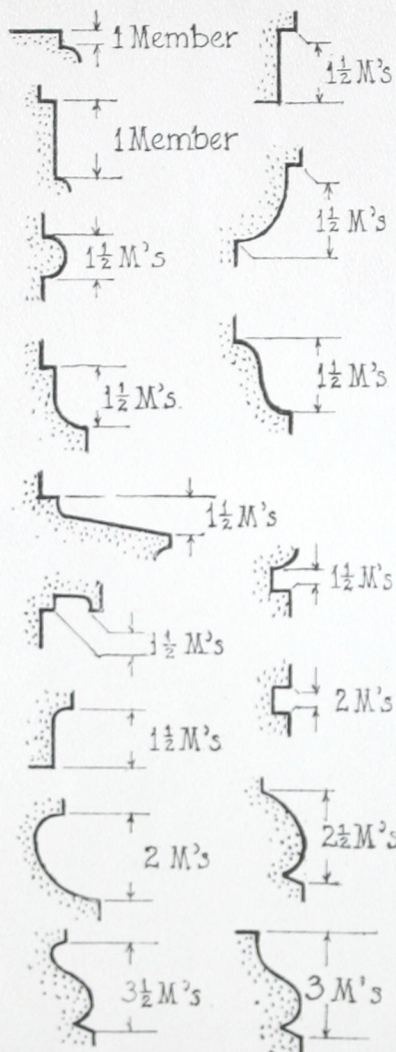


**Plate No. 7, Victoria White  
Granite; Fitzwilliam  
Granite.**

Quarry at Fitzwilliam,  
N. H.  
Quarried and cut by:  
MILFORD PINK-VICTORIA  
WHITE GRANITE CO.  
(Main Office) Milford, Mass.

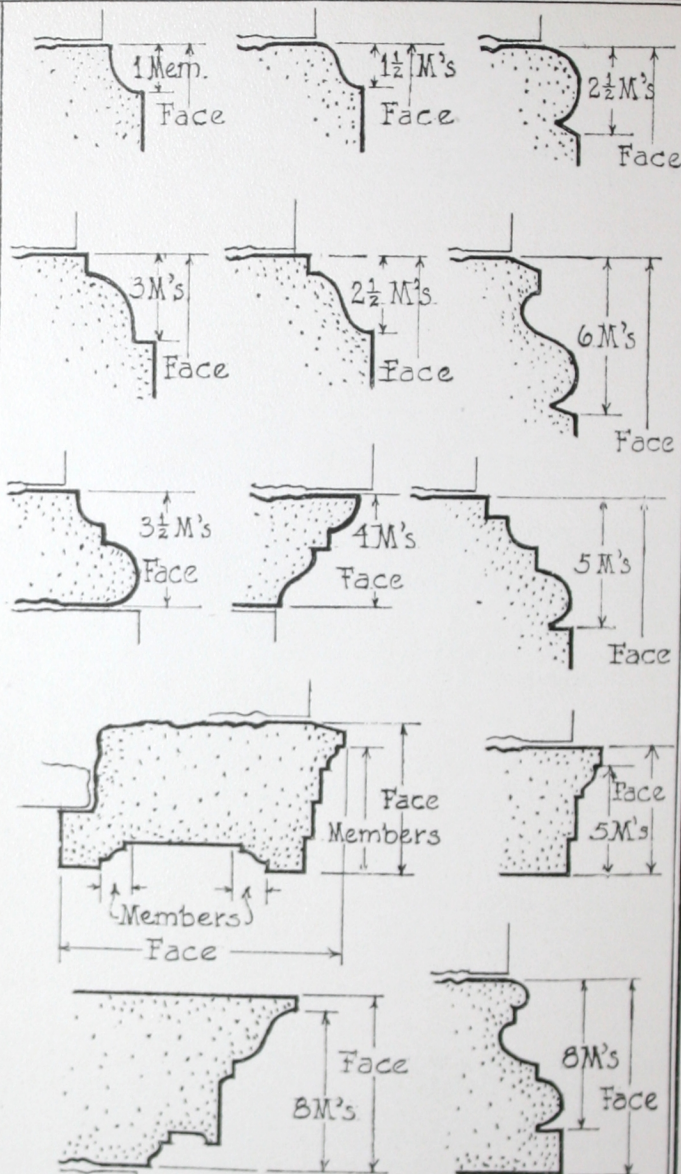




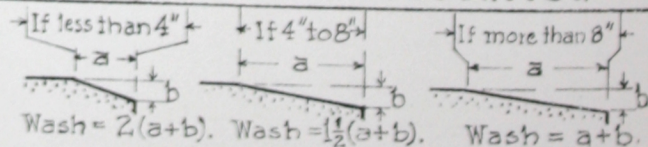


### GENERAL MEMBER CHART

In general every 4 inches or fraction thereof is counted as one MEMBER. One lineal foot of member is approximately equal to the cost of one square foot of plain work.



### EXAMPLES OF APPLICATION



RELATIVE VALUE OF WASH OR CHAMFER IN TERMS OF PLANE SURFACE

DRAWN BY  
SWEET'S CATALOGUE  
SERVICE, INC.

UNITS USED AS BASIS FOR ESTIMATING  
COST OF GRANITE MOULDINGS

NOT DRAWN TO SCALE  
DATE-JUNE-20  
1



**Plate No. 8, Concord Granite.**

Quarries at Concord,  
N. H.

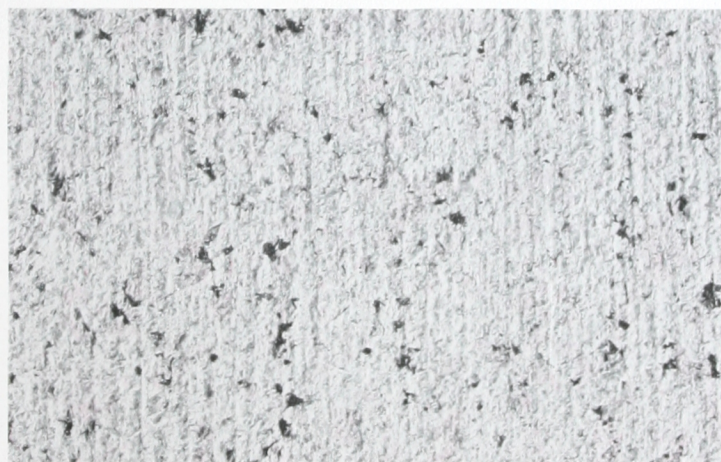
Quarried and cut by:  
THE JOHN SWENSON GRANITE  
Co.  
(Main Office) Concord, N. H.  
NEW ENGLAND GRANITE  
WORKS  
(Main Office) Westerly, R. I.



**Plate No. 9, Rockport Gray Granite.**

Quarries at Rockport,  
Mass.

Quarried and cut by:  
ROCKPORT GRANITE CO.  
(Main Office) Rockport,  
Mass.



**Plate No. 10, Woodbury Gray Granite.**

Quarry at Woodbury, Vt.  
Quarried and cut by:  
WOODBURY GRANITE CO.  
(Main Office) Hardwick, Vt.





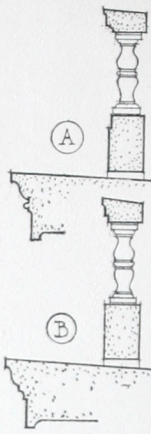
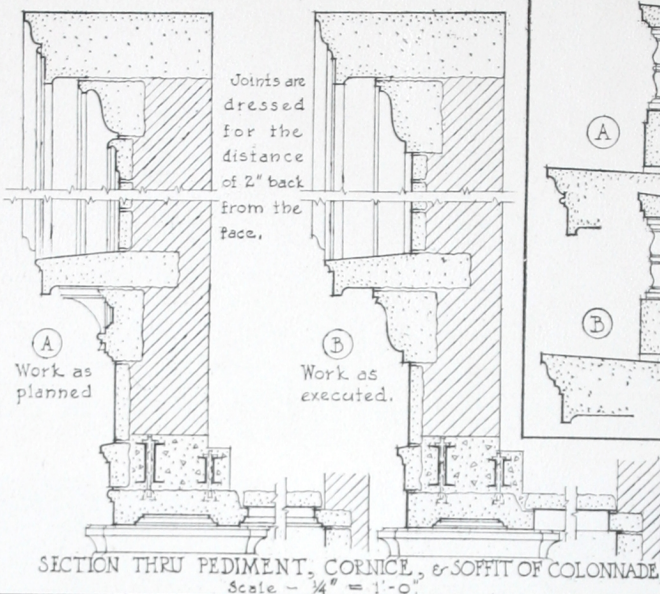
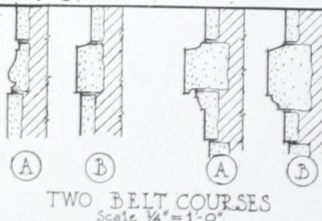
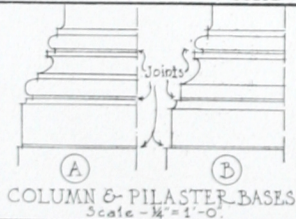
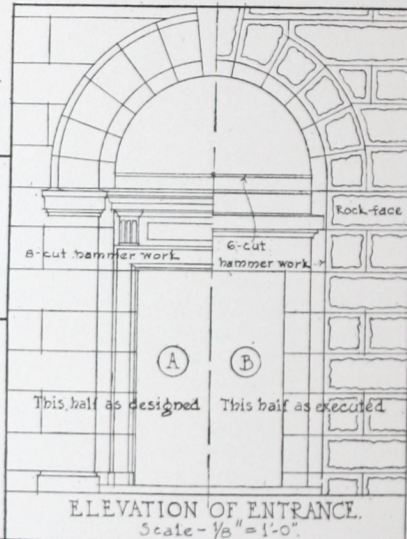


Diagram "A" shows stone (or brass) dowels, an expensive method of anchoring balusters. Diagram "B" shows an inexpensive but practical method of anchoring with cement, with just as satisfactory results.

### BALUSTRADES

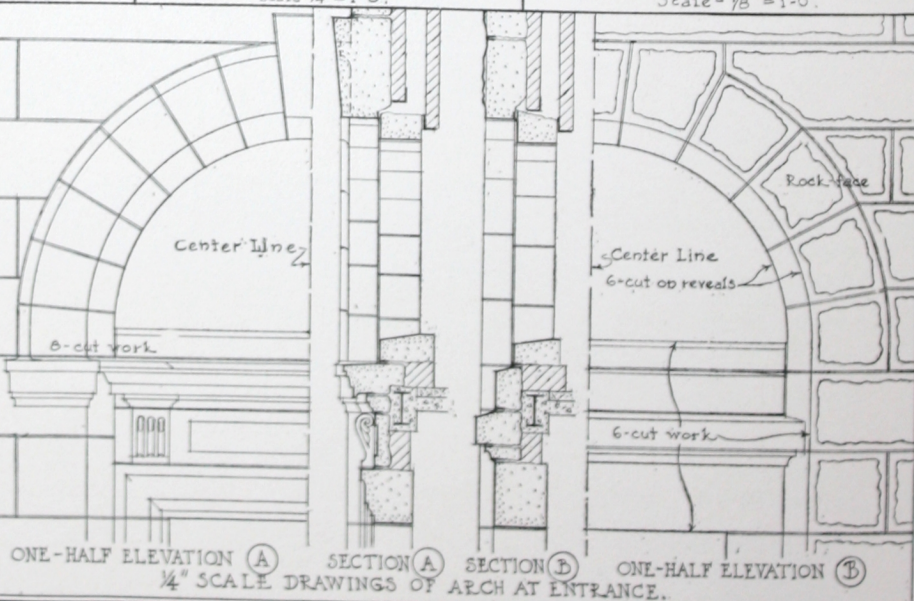


### NOTES

This sheet shows changes made in the details of an actual building in which the mouldings were simplified & the surfaces below the 1st fl level were changed to rock-face & hammer-trim, with saving of \$75,000 on the granite work.

Details "A" show mouldings as originally designed.

Details "B" show the executed work.



DRAWN BY  
SWEET'S CATALOGUE  
SERVICE, INC.

COMPARATIVE DETAILS SHOWING ECONOMICAL DESIGN  
FOR GRANITE WORK.

SCALE  $\frac{1}{8}"$  &  $\frac{1}{4}"$  DRWG  
EQUAL 1'-0"  
DATE JUNE '20 2



**Plate No. 11, Goss Pink  
Granite, Crotch Island  
Granite, Stonington  
Pink Granite.**

Quarry at Crotch Island,  
Stonington, Me.

Quarried by:

JOHN L. GOSS CORPORATION  
(Main Office) Stonington, Me.

Cut by:

H. E. FLETCHER Co.  
West Chelmsford, Mass.  
NEW ENGLAND GRANITE  
WORKS

Westerly, Rhode Island  
ROCKPORT GRANITE Co.  
Rockport, Mass.

THE JOHN SWENSON GRANITE  
Co.

Concord, N. H.  
—and others



**Plate No. 12, Stonington  
Pink-Gray Granite,  
Deer Isle Granite,  
Stonington Pink  
Granite.**

Quarry at Deer Isle,  
Stonington, Me.

Quarried and cut by:

RODGERS GRANITE  
CORPORATION  
(Main Office) 271 West 125th  
St., New York, N. Y.



**Plate No. 13, Conway Pink  
Granite.**

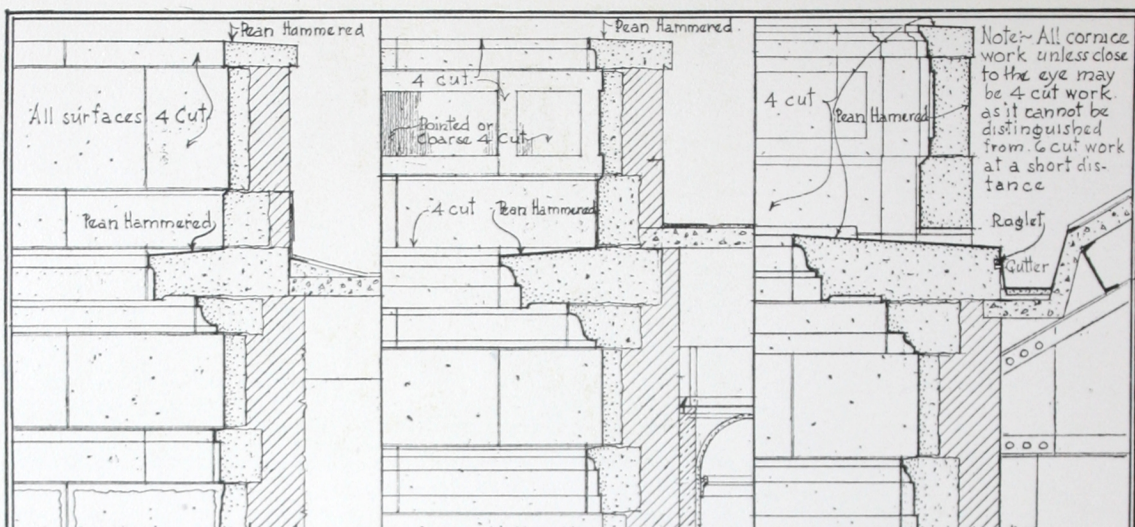
Quarry at Redstone,  
N. H.

Quarried and cut by:

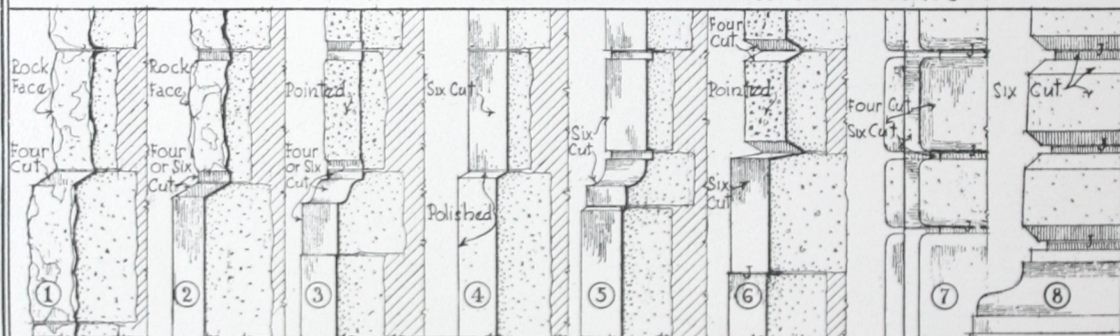
MAINE & NEW HAMPSHIRE  
GRANITE CORPORATION  
(Main Office) North Jay, Me.



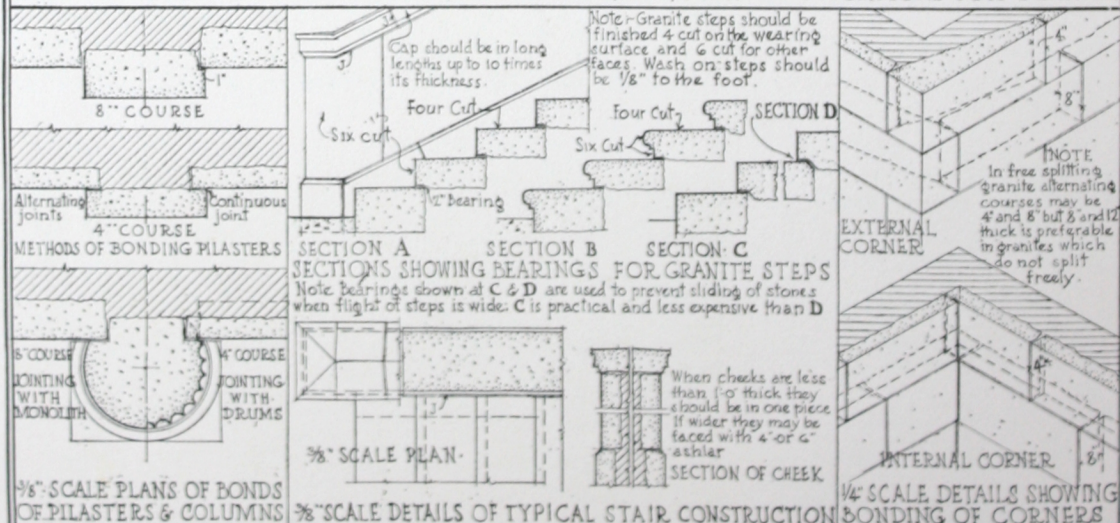




¾" SCALE DETAILS OF THREE SIMPLE GRANITE CORNICES



¾" SCALE DETAILS SHOWING VARIOUS SURFACES, BASES AND RUSTICATIONS FOR GRANITE



DRAWN BY  
SWEETS CATALOGUE  
SERVICE, INC.

TYPICAL GRANITE DETAILS  
SHOWING PRACTICAL METHODS OF CONSTRUCTION

SCALE - ¾" = 1'-0"  
DATE - JUNE-20  
DRWG 3



**Plate No. 14, Milford Pink  
Granite.**

Quarry at Milford, Mass.  
Quarried and cut by:  
MILFORD PINK-VICTORIA  
WHITE GRANITE CO.  
(Main Office) Milford, Mass.



**Plate No. 15, Moose-a-bee  
Red Granite.**

Quarry at Jonesport, Me.  
Quarried and cut by:  
ROCKPORT GRANITE CO.  
(Main Office) Rockport,  
Mass.



**Plate No. 16, Red Westerly  
Granite.**

Quarry at Westerly, R. I.  
Quarried and cut by:  
NEW ENGLAND GRANITE  
WORKS  
(Main Office) Westerly, R. I.





## Granite Specifications.

SECTION 1. GENERAL CONDITIONS—All work included under the specifications for granite is to be subject to the general conditions hereinbefore written for the entire work.

SECTION 2. MATERIAL—All granite shall be of compact structure, hard and practically non-absorbent, and equal in durability and strength to the best granite of the kind required. Granite shall be (mention color, tone and grain) and of the kind designated as (mention name) granite from quarries at (mention location). Granites designated as (mention names and quarries), will also be considered. In submitting estimates, the contractor shall state the name of granite, and quarry, upon which his proposal is based.

SECTION 3. QUARRY AND PLANT—Granite must be obtained from approved, well-known quarries having capacity and facilities for furnishing the quantity, sizes, and quality of granite required, and the cutting and finishing must be done by firms properly equipped to produce the finished material without causing delay in the progress of the work. Evidence to this effect must be submitted if required by the architect.

SECTION 4. QUALITY—All the granite shall be selected to meet the requirements of these specifications and shall be absolutely sound and free from seams or other defects which would impair its strength. Exposed surfaces shall be free from spots, stain, discoloration, knot formations, spalls, chips or other defects, which would impair the appearance of the work, except that in inconspicuous places a reasonable number of knot spots or texture variations inherent to the particular granite proposed may be permissible if samples showing the maximum of such characteristics be submitted to, and approved by, the architect.

In quarrying the granite the blocks shall be so selected that any variations in color permitted by the architect will be uniformly distributed throughout the exposed surfaces of the walls and other portions of the work. If granites from different quarries are used such granites shall be similar in texture and shall satisfactorily match in color and tone throughout the work.

SECTION 5. WORK INCLUDED—The work to be done by the contractor under the heading of Granite shall include the furnishing, delivery and setting in place and completion of all granite work as required by the drawings and herein specified.

The work generally shall include (state portions of work to be of granite).

*Note*—State any portions or special features which are not to be of granite or not to be included in this contract.

SECTION 6. SHOP DRAWINGS—The granite contractor shall prepare all necessary shop drawings, showing the bedding, bonding, and jointing of all the granite work and typical and special anchoring of same. The dimensions and setting number of each granite stone shall be indicated upon the drawing which shall be submitted and approved by the architect as required under general conditions. No cutting shall be done or work completed except from shop drawings which have been approved by the architect.

SECTION 7. CORNER STONE\*—The granite contractor shall furnish and set where indicated on the drawing (or as directed) a corner stone of the required dimensions, having an inscription cut thereon in accordance with the drawings and recessed to receive the copper box to be furnished by the (general contractor).

\*If required.

SECTION 8. SAMPLES—After the award of the contract 2 samples of each kind of granite required 8 by 8 by 2 in., showing the extreme variation in quality, color and texture that will occur in any granite which will be used, shall be submitted to the architect. Upon approval of these samples, one of each shall be returned to the granite contractor for use at the quarry or plant and the other retained by the architect for comparison with work at the building. Samples shall be dressed on the face and one edge to show finish required by the specification; opposite face may be split or dressed to the approximate size called for or may be dressed to another of the specified finishes called for.

SECTION 9. FINISHES—The exposed surfaces of the granite shall be dressed as indicated on the drawings or specified herein. In general, surface finishes shall be as follows: From 2 in. below grade to level (state level or course) shall be dressed with best (state finish—as polished, six-cut, eight-cut) work; from level (state level) to level (state level) shall be dressed with best (state finish) work; and from level

(state level) to top of parapet shall be dressed with best (state finish) work.

*Note*—State here any exceptions to the above such as "treads of steps or platforms shall be .... finish;" "back of parapet and coping courses shall be ..... finish, etc.

The cut marks of all bush hammer work shall be vertical except as noted.

Soffits shall be bushed at right angles to the face.

Faces of key blocks and voussoirs shall be bushed (state whether vertical or radial).

Top surfaces of window and door sills, steps, copings, washes and projecting courses shall be bushed at right angles to the nosing.

Moulded surfaces shall be bushed parallel to the direction of the mouldings.

*Note*—Mention other specific instructions on direction of bushing.

SECTION 10. CUTTING—All exposed surfaces must be out-of-wind, free from waves, projections or depressions and faces of granite in the same plane must be absolutely flush at joints. Arrises must be cut sharp and true to square or pattern and continuous with adjoining arrises.

Slight inequalities which may occur in setting shall be trimmed to the proper surfaces and refinished equal to the original finish.

SECTION 11. BEDS AND JOINTS—Beds shall be horizontal and shall be cut full and square for a distance of at least 2 in. back from the face, from which point they may fall off not to exceed 1 in. in 12 in.; and shall be reasonably free from large depressions and cuppings, which might impair the stability of the work.

Joints shall be dressed at right angles to the face for at least 1½ in. back from which point they may fall away, not to exceed 1½ in. in 12 in.

Beds of granite stones shall be scabbled or split to approximate vertical surfaces which shall not vary more than 1 in. in 12 in. from the true vertical, nor vary more than 1 in. either way from the thickness called for on the drawing.

SECTION 12. JOINTING—The jointing of the granite work shall be as shown on the drawings and no additional joints will be permitted except upon written consent of the architect. The joints shall be uniformly ¼ in. (or ⅜ in.) in thickness.

SECTION 13. BONDING—The bonding of various portions of the work shall be as shown on drawings. Alternate courses of granite shall bond at least 4 in. with the backing except where otherwise shown. No granite stone shall have less than 4 in. bed; projecting courses shall have beds equal to the projections unless otherwise shown. Where brick backing is required the granite shall not go closer than 4½ in. to the inside of the brick wall. Where granite facing occurs at grades it shall extend nowhere less than 4 in. below grade unless otherwise shown.

SECTION 14. REVEALS AND RETURNS—Reveals of all openings, unless otherwise shown shall be cut solid without vertical joints. Returns shall be not less than indicated on the drawings. Mitering of granite stones at corners will not be permitted.

SECTION 15. MOULDINGS—Granite stones forming continuous moulded courses shall be of uniform profile on the face with continuous unbroken lines absolutely flush at the joints and with the surfaces free from projections or depressions and out-of-wind.

SECTION 16. WASHES AND DRIPS—All exterior projecting granite stones and all exterior sills, steps, platforms, coping and other stones with exposed top surfaces, shall be cut with a wash on top. Where other work is built upon such granite stones, they shall be cut with raised seats and lugs to form level beds for work built upon them.

All projecting granite stone, such as sills, cornices, copings, etc., shall have a groove drip cut on the underside unless otherwise detailed.

All exterior door sills shall be cut with raised thresholds unless otherwise shown.

SECTION 17. MISCELLANEOUS—Mouldings and projections must not be subjected to pressure; and granite stones having projecting members which have weight of any kind bearing upon the upper surface shall have seats cut to bear such weights; and in all cases the edges of mouldings or projections must be kept free from pressure.

Reglets shall be cut for flashing and counter flashing as required.

SECTION 18. MODELS—Full size plaster models of all ornamental and carved work, shall be furnished to the granite contractor as hereinbefore specified.



**Plate No. 17, Somes Sound  
Granite.**

Quarry at Mount Desert,  
Me.

Quarried and cut by:  
BOOTH BROS. & HURRICANE  
ISLE GRANITE CO.  
(Main Office) 208 Broadway,  
New York, N. Y.



**Plate No. 18, Rockport Sea-  
Green Granite.**

Quarry at Rockport,  
Mass.

Quarried and cut by:  
ROCKPORT GRANITE CO.  
(Main Office) Rockport,  
Mass.



**Plate No. 19, Conway Green  
Granite.**

Quarry at Redstone,  
N. H.

Quarried and cut by:  
MAINE & NEW HAMPSHIRE  
GRANITE CORPORATION  
(Main Office) North Jay,  
Me.





## Specifications (Continued).

Where necessary for the proper execution of the work, models will be delivered at the plant of the granite contractor free of expense to him, to be used by him for the purpose of roughing and such carving as may be done at the plant, the granite contractor to carefully preserve these models for re-shipment to the building if required. The expense of handling and re-crating for shipment at the plant to be borne by the granite contractor.

**SECTION 19. ROUGHING FOR CARVING**—No roughing for carved work is to be done from drawings but from approved models only. Sufficient stock in all cases shall be left for the carving and the granite shall be roughed to suitable form and condition for the carver. The cutter and carver shall co-operate in the method of securing the proper roughing for ornamental work.

**SECTION 20. CARVING\***—Carving may be done at the site either before or after the granite is set or the work may be delivered at the site already carved. In case the carving is done at the plant or at the site before being set in place, this contractor shall do all necessary refinishing or retouching to make the carving conform to the models and to the satisfaction of the architect. All carved ornament shall be executed by hand by skilled carvers in a spirited and artistic manner and in strict accordance with the approved models.

Where carving is done after the work is set all necessary staging and protection shall be furnished by the general contractor, and if required the models shall be hoisted into position and properly secured to the scaffolding for the convenient use of the carvers by the general contractor.

Inscriptions, lettering or numerals if required shall be clean cut and in accordance with the models, if provided, or otherwise with the full sized details of same. The incised surfaces of lettering shall be cut smooth and accurately to the full depth and section shown on the models or drawings.

*\*Note*—If carving is to be done by others than the granite contractor same should be noted here—and this specification modified to suit conditions.

**SECTION 21. CRATING AND SHIPPING**—This contractor shall properly crate the finished granite for shipment, the crating being so constructed as to properly protect the edges and surfaces of the exposed portions of the work during shipment and handling prior to setting same. Due precaution shall be taken to use crating material which will not stain or discolor the exposed surfaces of granite; and especial care shall be used to protect and suitably note any delicate portion where extra care should be observed in handling.

The finished granite properly crated shall be carefully loaded for shipment by this contractor who shall exercise all necessary precautions in loading to withstand the usual hazards in transit.

**SECTION 22. PRECAUTION AGAINST STAIN**—Special precautions shall be taken in the setting to guard against possible seepage through the joints of moisture from the mortar or material used in backing up the granite work, which will cause discoloration around the face joints or surface of the granite.

At least 12 hours before the granite is set, all surfaces not exposed shall be thoroughly coated with an approved damp-proof compound to within 1 in. of the exposed face. After the granite is set, and before backing up, another coat of the same dampproofing compound shall be applied to the back for the special purpose of covering the backs of the mortar joints.

The painting of the granite may be omitted with the approval of the architect when it is definitely known that the setting mortar will not stain the granite, but the backs of the mortar joints should be dampproofed in any event to guard against seepage.

If the first coat of dampproofing is applied at the mill, the setting numbers must be painted conspicuously over the damp-proofing.

The granite shall at all times be protected from stain and upon delivery at the site shall be kept stacked on timber or platforms at least 4 in. above the ground, until set in place in the wall.

Under no circumstances shall salt be used for thawing out Lewis holes or otherwise in connection with the granite work.

**SECTION 23. SETTING**—Each granite stone shall be brushed clean and drenched immediately before being set. Each piece shall be carefully bedded in a full bed of non-staining mortar and tapped home with a wooden mallet to a full and solid bearing.

The face of the granite work shall be kept free from mortar at all times.

Granite facing shall not in any case be built up more than two courses ahead of the backing and no stone having a greater width of bed than the one below it shall be set until the lower course is backed up.

All surplus mortar shall be immediately raked out to a depth of at least 1 in. and every precaution taken to prevent stones bearing upon the edges.

Sills, etc., subject to pressure, shall be bedded only at the ends.

The cement in the mortar used for setting all granite work where the joint is exposed to the weather shall be made waterproof with a satisfactory waterproofing compound, mixed with the mortar.

The sand used in all setting mortar shall be such as to cause no stain or chemical action with the cement.

**SECTION 24. ANCHORS, DOWELS, ETC.**—All bolts, expansion bolts, anchors, ties, etc., required in the setting of the granite work, will be furnished to the granite contractor. All ashlar shall be anchored to the backing with heavily galvanized wrought iron anchors  $\frac{1}{4}$  by  $\frac{1}{4}$  in. turned down into the granite  $\frac{1}{4}$  in. and extending into the backing 8 in., if the thickness of wall permits; the end to be turned up  $1\frac{1}{2}$  in. into the backing. There shall be at least two anchors to every stone whose length exceeds its height and in general there shall be not less than two anchors to each superficial square yard of ashlar.

*Note*—Special anchoring for heavy cornices and overhanging courses, cramps, dowels, etc. for parapets, balustrades, pilasters and columns, etc., should be suitably described or shown according to the requirements of the work.

**SECTION 25. BOXING AND PROTECTION**—All granite work must be protected from damage during the progress of the work and until the completion of the building.

The general contractor shall provide the necessary protection, covering all projections, top surfaces, angles, etc., protective boxing to be securely fastened in position and securely nailed throughout with galvanized iron nails. No lumber or material to be used which would in any way stain or deface the granite work.

All necessary forms, centers, scaffolding, etc., required by the setter or carver to be furnished by the general contractor.

**SECTION 26. POINTING AND CLEANING**—After the completion of the granite work or at such time thereafter as all liability from stain of other operations on the building is passed, and when there is no danger therefrom the whole of the granite work shall be carefully cleaned down, removing all dirt, mortar, stains, and other defacements.

The use of wire brushes, acids or solutions which might cause discoloration will not be permitted.

All face joints shall be raked out to a depth of not less than 1 in., brushed clean, thoroughly wetted, and filled with pointing mortar and then carefully jointed. The pointing mortar must be packed solidly into all joints, completely filling the same; and the form of joint shall be as directed by the architect.

Vertical joints in the top courses of uncovered cornices having a projection of 8 in. or more shall be filled with mortar by grouting to within 3 in. of the top of the granite, then calked with picked oakum and filled with molten lead, calked against the edges and slightly convex at the top—taking care that the oakum is kept at least 2 in. away from the face and top of granite.

Joints in the upper surfaces of projecting stones which are not so protected and in all platforms, steps and coping, shall be raked out at least 2 in. deep and thoroughly grouted flush with the surface of the granite.

Pointing and cleaning shall start at the top and be continued until such work is completed.

**SECTION 27. DEFECTIVE WORK**—No patching or hiding of defects will be permitted. Defective granite stones shall be replaced with perfect ones, except in extreme cases where a stone has been damaged through no fault of the granite contractor, and where it is possible and practicable to remedy the defect without in any way impairing the appearance, strength or durability of the work—and then only with the approval and under the supervision of the architect—and where a satisfactory allowance has been agreed upon which shall be deducted from the contract price.

## Specifications—Short Form.

A short form of Granite Specifications has been prepared by the Association for use where a comparatively small amount of granite is required, but in which the standards of workmanship and other essentials should conform to requirements set forth in detail in the above complete form. For lack of adequate space this short form has been omitted from this catalogue, but will be sent by the Secretary to any architect on request.



